

**Final Industrial Area  
Sampling and Analysis Plan  
Addendum #IA-04-01  
IHSS Group 400-2  
(UBC 440 – Modification Center)**

Approval received from the Colorado Department of Public Health and Environment

November 17, 2003

Approval letter is contained in the Administrative Record.

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CDPHE  
COMMUNITY  
ENVIRONMENT

**November 2003**

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## ACRONYMS

AL	action level
CDPHE	Colorado Department of Public Health and Environment
DOE	U.S. Department of Energy
EPA	U.S. Environmental Protection Agency
FY	Fiscal Year
HPGe	high-purity germanium
HRR	Historical Release Report
IA	Industrial Area
IASAP	Industrial Area Sampling and Analysis Plan
IHSS	Individual Hazardous Substance Site
MDL	method detection limit
N/A	not applicable
PAC	Potential Area of Concern
PCOC	potential contaminant of concern
RFCA	Rocky Flats Cleanup Agreement
SAP	Sampling and Analysis Plan
UBC	Under Building Contamination
VOC	volatile organic compound
WRW	wildlife refuge worker

## 1.0 INTRODUCTION

This Industrial Area (IA) Sampling and Analysis Plan (SAP) (IASAP) (DOE 2001) Addendum #IA-04-01 includes Individual Hazardous Substance Site (IHSS) Group-specific information, sampling locations, and potential contaminants of concern (PCOCs) for IHSSs, Potential Areas of Concern (PACs), and Under Building Contamination (UBC) Sites proposed for characterization during Fiscal Year (FY) 04. This IASAP Addendum is a supplement to the IASAP (DOE 2001) and includes data and proposed sampling locations for IHSS Group 400-2. IHSS Group 400-2 consists of one UBC Site: UBC 440 – Modification Center. The location of the UBC Site proposed for IHSS Group 400-2 is shown on Figure 1.

## 2.0 EXISTING CHARACTERIZATION INFORMATION

Existing concentrations and activities above the method detection limits (MDLs) or background means plus two standard deviations are presented on Figure 2. Existing data for this UBC Site are available in Appendix C of the IASAP (DOE 2001) and the Site Historical Release Reports (HRRs) (DOE 1992-2002). Table 1 presents the PCOCs and proposed sampling methodology.

No Rocky Flats Cleanup Agreement (RFCA) wildlife refuge worker (WRW) action level (AL) (DOE et al. 2003) or ecological receptor AL exceedances were observed at IHSS Group 400-2. However, metals and radionuclides at several locations exceed corresponding background means plus two standard deviations in surface soil and subsurface soil (Figure 2). The following metals and radionuclides were reported: arsenic, copper, cobalt, manganese, americium-241, plutonium-239/240, and total uranium.

**Table 1**  
**IHSS Group 400-2 PCOCs**

<b>IHSS Group</b>	<b>IHSS/PAC/UBC Site</b>	<b>PCOCs</b>	<b>Media</b>	<b>Data Source</b>	<b>Sampling Location Method</b>
400-2	UBC 440 – Modification Center	Radionuclides Metals VOCs	Surface and Subsurface Soil	HRRs (DOE 1992-2002) Process knowledge (IASAP [DOE 2001])	Statistical and biased grid

## 3.0 SAMPLING

The proposed sampling specifications (number and type of samples) for UBC 440 are listed in Table 2 and shown on Figure 3. Proposed new sampling locations are the starting point for IHSS Group characterization. After characterization sampling begins, the number and type of samples may be modified based on sampling results. Statistical sampling locations within a building footprint may be adjusted in the field to collect samples from specific building features. In the glovebox room, the headspace sampling room, and the room where heat blankets were wrapped around drums prior to sending to WIPP, the sample (or sample nearest) an expansion joint will be field located to that joint

if present. Changes to sampling specifications will be considered in consultation with the regulatory agencies.

Three types of sampling strategies are used to determine sampling locations: geostatistical, statistical, and biased. Statistical and biased methods were used to determine sampling locations for this IASAP Addendum. The statistical grid has computer-generated random starting points and orientations and uses a 72-foot grid spacing interval. To supplement the statistical grid sampling locations, biased sampling locations were included to characterize locations near drain spouts. The UBC 440 sampling summary is presented in Table 3.

#### **4.0 REFERENCES**

DOE, 1992-2002, Historical Release Reports for the Rocky Flats Plant, Golden, Colorado.

DOE, 2001, Industrial Area Sampling and Analysis Plan, Rocky Flats Environmental Technology Site, Golden, Colorado, June.

DOE, CDPHE, and EPA, 2003, Proposed Modifications to the Rocky Flats Cleanup Agreement, U.S. Department of Energy, Colorado Department of Public Health and Environment, and U.S. Environmental Protection Agency, Rocky Flats Environmental Technology Site, Golden, Colorado, April.

**Table 2**  
**UBC 440 Sampling Specifications**

IHSS Group	IHSS/PAC/ UBC Site	Location Code	Easting	Northing	Media	Depth Interval	Analyte	On-site Laboratory Method	Off-site Laboratory Method	Comments
400-2	UBC 440	BW34-002A	2082104.6	748296.4	Surface Soil	0-0.5'	Metals	N/A	6010	Statistical grid
		BW34-002A	2082104.6	748296.4	Surface Soil	0-0.5'	Radionuclides	HPGe	Alpha Spec	Statistical grid
		BW34-002A	2082104.6	748296.4	Surface Soil	0-0.5'	VOCs	8260	8260	Statistical grid
		BW34-002B	2082104.6	748296.4	Subsurface Soil	0.5-2.5'	Metals	N/A	6010	Statistical grid
		BW34-002B	2082104.6	748296.4	Subsurface Soil	0.5-2.5'	Radionuclides	HPGe	Alpha Spec	Statistical grid
		BW34-002B	2082104.6	748296.4	Subsurface Soil	0.5-2.5'	VOCs	8260	8260	Statistical grid
		BW34-003A	2082071.9	748232.27	Surface Soil	0-0.5'	Metals	N/A	6010	Statistical grid
		BW34-003A	2082071.9	748232.27	Surface Soil	0-0.5'	Radionuclides	HPGe	Alpha Spec	Statistical grid
		BW34-003A	2082071.9	748232.27	Surface Soil	0-0.5'	VOCs	8260	8260	Statistical grid
		BW34-003B	2082071.9	748232.27	Subsurface Soil	0.5-2.5'	Metals	N/A	6010	Statistical grid
		BW34-003B	2082071.9	748232.27	Subsurface Soil	0.5-2.5'	Radionuclides	HPGe	Alpha Spec	Statistical grid
		BW34-003B	2082071.9	748232.27	Subsurface Soil	0.5-2.5'	VOCs	8260	8260	Statistical grid
		BW34-005A	2082065.5	748356.81	Surface Soil	0-0.5'	Metals	N/A	6010	Statistical grid
		BW34-005A	2082065.5	748356.81	Surface Soil	0-0.5'	Radionuclides	HPGe	Alpha Spec	Statistical grid
		BW34-005A	2082065.5	748356.81	Surface Soil	0-0.5'	VOCs	8260	8260	Statistical grid
		BW34-005B	2082065.5	748356.81	Subsurface Soil	0.5-2.5'	Metals	N/A	6010	Statistical grid
		BW34-005B	2082065.5	748356.81	Subsurface Soil	0.5-2.5'	Radionuclides	HPGe	Alpha Spec	Statistical grid
		BW34-005B	2082065.5	748356.81	Subsurface Soil	0.5-2.5'	VOCs	8260	8260	Statistical grid
		BW34-006A	2082032.7	748292.68	Surface Soil	0-0.5'	Metals	N/A	6010	Statistical grid
		BW34-006A	2082032.7	748292.68	Surface Soil	0-0.5'	Radionuclides	HPGe	Alpha Spec	Statistical grid
		BW34-006A	2082032.7	748292.68	Surface Soil	0-0.5'	VOCs	8260	8260	Statistical grid
		BW34-006B	2082032.7	748292.68	Subsurface Soil	0.5-2.5'	Metals	N/A	6010	Statistical grid
		BW34-006B	2082032.7	748292.68	Subsurface Soil	0.5-2.5'	Radionuclides	HPGe	Alpha Spec	Statistical grid
		BW34-006B	2082032.7	748292.68	Subsurface Soil	0.5-2.5'	VOCs	8260	8260	Statistical grid
		BW34-007A	2082000	748228.54	Surface Soil	0-0.5'	Metals	N/A	6010	Statistical grid
		BW34-007A	2082000	748228.54	Surface Soil	0-0.5'	Radionuclides	HPGe	Alpha Spec	Statistical grid
		BW34-007A	2082000	748228.54	Surface Soil	0-0.5'	VOCs	8260	8260	Statistical grid
		BW34-007B	2082000	748228.54	Subsurface Soil	0.5-2.5'	Metals	N/A	6010	Statistical grid
		BW34-007B	2082000	748228.54	Subsurface Soil	0.5-2.5'	Radionuclides	HPGe	Alpha Spec	Statistical grid
		BW34-007B	2082000	748228.54	Subsurface Soil	0.5-2.5'	VOCs	8260	8260	Statistical grid

IHSS Group	IHSS/PAC/UBC Site	Location Code	Easting	Northing	Media	Depth Interval	Analyte	On-site Laboratory Method	Off-site Laboratory Method	Comments
		BW34-007B	2082000	748228.54	Subsurface Soil	0.5-2.5'	VOCs	8260	8260	Statistical grid
		BW34-008A	2081993.6	748353.08	Surface Soil	0-0.5'	Metals	N/A	6010	Statistical grid
		BW34-008A	2081993.6	748353.08	Surface Soil	0-0.5'	Radionuclides	HPGe	Alpha Spec	Statistical grid
		BW34-008A	2081993.6	748353.08	Surface Soil	0-0.5'	VOCs	8260	8260	Statistical grid
		BW34-008B	2081993.6	748353.08	Subsurface Soil	0.5-2.5'	Metals	N/A	6010	Statistical grid
		BW34-008B	2081993.6	748353.08	Subsurface Soil	0.5-2.5'	Radionuclides	HPGe	Alpha Spec	Statistical grid
		BW34-008B	2081993.6	748353.08	Subsurface Soil	0.5-2.5'	VOCs	8260	8260	Statistical grid
		BW34-009A	2081960.8	748288.95	Surface Soil	0-0.5'	Metals	N/A	6010	Statistical grid
		BW34-009A	2081960.8	748288.95	Surface Soil	0-0.5'	Radionuclides	HPGe	Alpha Spec	Statistical grid
		BW34-009A	2081960.8	748288.95	Surface Soil	0-0.5'	VOCs	8260	8260	Statistical grid
		BW34-009B	2081960.8	748288.95	Subsurface Soil	0.5-2.5'	Metals	N/A	6010	Statistical grid
		BW34-009B	2081960.8	748288.95	Subsurface Soil	0.5-2.5'	Radionuclides	HPGe	Alpha Spec	Statistical grid
		BW34-009B	2081960.8	748288.95	Subsurface Soil	0.5-2.5'	VOCs	8260	8260	Statistical grid
		BW34-014A	2081943.5	748211.81	Surface Soil	0-0.5'	Metals	N/A	6010	Bias sample - drain outfall
		BW34-014A	2081943.5	748211.81	Surface Soil	0-0.5'	Radionuclides	HPGe	Alpha Spec	Bias sample - drain outfall
		BW34-014A	2081943.5	748211.81	Surface Soil	0-0.5'	VOCs	8260	8260	Bias sample - drain outfall
		BW34-014B	2081943.5	748211.81	Subsurface Soil	0.5-2.5'	Metals	N/A	6010	Bias sample - drain outfall
		BW34-014B	2081943.5	748211.81	Subsurface Soil	0.5-2.5'	Radionuclides	HPGe	Alpha Spec	Bias sample - drain outfall
		BW34-014B	2081943.5	748211.81	Subsurface Soil	0.5-2.5'	VOCs	8260	8260	Bias sample - drain outfall
		BW34-015A	2082007	748214.25	Surface Soil	0-0.5'	Metals	N/A	6010	Bias sample - drain outfall
		BW34-015A	2082007	748214.25	Surface Soil	0-0.5'	Radionuclides	HPGe	Alpha Spec	Bias sample - drain outfall
		BW34-015A	2082007	748214.25	Surface Soil	0-0.5'	VOCs	8260	8260	Bias sample - drain outfall
		BW34-015B	2082007	748214.25	Subsurface Soil	0.5-2.5'	Metals	N/A	6010	Bias sample - drain outfall
		BW34-015B	2082007	748214.25	Subsurface Soil	0.5-2.5'	Radionuclides	HPGe	Alpha Spec	Bias sample - drain outfall
		BW34-015B	2082007	748214.25	Subsurface Soil	0.5-2.5'	VOCs	8260	8260	Bias sample - drain outfall
		BW34-016A	2082077.8	748214.25	Surface Soil	0-0.5'	Metals	N/A	6010	Bias sample - drain outfall
		BW34-016A	2082077.8	748214.25	Surface Soil	0-0.5'	Radionuclides	HPGe	Alpha Spec	Bias sample - drain outfall
		BW34-016A	2082077.8	748214.25	Surface Soil	0-0.5'	VOCs	8260	8260	Bias sample - drain outfall
		BW34-016B	2082077.8	748214.25	Subsurface Soil	0.5-2.5'	Metals	N/A	6010	Bias sample - drain outfall
		BW34-016B	2082077.8	748214.25	Subsurface Soil	0.5-2.5'	Radionuclides	HPGe	Alpha Spec	Bias sample - drain outfall
		BW34-016B	2082077.8	748214.25	Subsurface Soil	0.5-2.5'	VOCs	8260	8260	Bias sample - drain outfall
		BW34-017A	2082093.6	748214.86	Surface Soil	0-0.5'	Metals	N/A	6010	Bias sample - drain outfall

IHSS Group	IHSS/PAC/ UBC Site	Location Code	Easting	Northing	Media	Depth Interval	Analyte	On-site Laboratory Method	Off-site Laboratory Method	Comments
		BW34-017A	2082093.6	748214.86	Surface Soil	0-0.5'	Radionuclides	HPGe	Alpha Spec	Bias sample -- drain outfall
		BW34-017A	2082093.6	748214.86	Surface Soil	0-0.5'	VOCs	8260	8260	Bias sample -- drain outfall
		BW34-017B	2082093.6	748214.86	Subsurface Soil	0.5-2.5'	Metals	N/A	6010	Bias sample -- drain outfall
		BW34-017B	2082093.6	748214.86	Subsurface Soil	0.5-2.5'	Radionuclides	HPGe	Alpha Spec	Bias sample -- drain outfall
		BW34-017B	2082093.6	748214.86	Subsurface Soil	0.5-2.5'	VOCs	8260	8260	Bias sample -- drain outfall
		BW35-040A	2082132.1	748365.59	Surface Soil	0-0.5'	Metals	N/A	6010	Bias sample -- drain outfall
		BW35-040A	2082132.1	748365.59	Surface Soil	0-0.5'	Radionuclides	HPGe	Alpha Spec	Bias sample -- drain outfall
		BW35-040A	2082132.1	748365.59	Surface Soil	0-0.5'	VOCs	8260	8260	Bias sample -- drain outfall
		BW35-040B	2082132.1	748365.59	Subsurface Soil	0.5-2.5'	Metals	N/A	6010	Bias sample -- drain outfall
		BW35-040B	2082132.1	748365.59	Subsurface Soil	0.5-2.5'	Radionuclides	HPGe	Alpha Spec	Bias sample -- drain outfall
		BW35-040B	2082132.1	748365.59	Subsurface Soil	0.5-2.5'	VOCs	8260	8260	Bias sample -- drain outfall
		BW35-041A	2082054	748364.98	Surface Soil	0-0.5'	Metals	N/A	6010	Bias sample -- drain outfall
		BW35-041A	2082054	748364.98	Surface Soil	0-0.5'	Radionuclides	HPGe	Alpha Spec	Bias sample -- drain outfall
		BW35-041A	2082054	748364.98	Surface Soil	0-0.5'	VOCs	8260	8260	Bias sample -- drain outfall
		BW35-041B	2082054	748364.98	Subsurface Soil	0.5-2.5'	Metals	N/A	6010	Bias sample -- drain outfall
		BW35-041B	2082054	748364.98	Subsurface Soil	0.5-2.5'	Radionuclides	HPGe	Alpha Spec	Bias sample -- drain outfall
		BW35-041B	2082054	748364.98	Subsurface Soil	0.5-2.5'	VOCs	8260	8260	Bias sample -- drain outfall
		BW35-042A	2081943.5	748364.98	Surface Soil	0-0.5'	Metals	N/A	6010	Bias sample -- drain outfall
		BW35-042A	2081943.5	748364.98	Surface Soil	0-0.5'	Radionuclides	HPGe	Alpha Spec	Bias sample -- drain outfall
		BW35-042A	2081943.5	748364.98	Surface Soil	0-0.5'	VOCs	8260	8260	Bias sample -- drain outfall
		BW35-042B	2081943.5	748364.98	Subsurface Soil	0.5-2.5'	Metals	N/A	6010	Bias sample -- drain outfall
		BW35-042B	2081943.5	748364.98	Subsurface Soil	0.5-2.5'	Radionuclides	HPGe	Alpha Spec	Bias sample -- drain outfall
		BW35-042B	2081943.5	748364.98	Subsurface Soil	0.5-2.5'	VOCs	8260	8260	Bias sample -- drain outfall
		BX34-002A	2082215.7	748239.72	Surface Soil	0-0.5'	Metals	N/A	6010	Statistical grid
		BX34-002A	2082215.7	748239.72	Surface Soil	0-0.5'	Radionuclides	HPGe	Alpha Spec	Statistical grid
		BX34-002A	2082215.7	748239.72	Surface Soil	0-0.5'	VOCs	8260	8260	Statistical grid
		BX34-002B	2082215.7	748239.72	Subsurface Soil	0.5-2.5'	Metals	N/A	6010	Statistical grid
		BX34-002B	2082215.7	748239.72	Subsurface Soil	0.5-2.5'	Radionuclides	HPGe	Alpha Spec	Statistical grid
		BX34-002B	2082215.7	748239.72	Subsurface Soil	0.5-2.5'	VOCs	8260	8260	Statistical grid
		BX34-004A	2082176.5	748300.13	Surface Soil	0-0.5'	Metals	N/A	6010	Statistical grid
		BX34-004A	2082176.5	748300.13	Surface Soil	0-0.5'	Radionuclides	HPGe	Alpha Spec	Statistical grid
		BX34-004A	2082176.5	748300.13	Surface Soil	0-0.5'	VOCs	8260	8260	Statistical grid



IHSS Group	IHSS/PAC/UBC Site	Location Code	Easting	Northing	Media	Depth Interval	Analyte	On-site Laboratory Method	Off-site Laboratory Method	Comments
		BX34-004B	2082176.5	748300.13	Subsurface Soil	0.5-2.5'	Metals	N/A	6010	Statistical grid
		BX34-004B	2082176.5	748300.13	Subsurface Soil	0.5-2.5'	Radionuclides	HPGe	Alpha Spec	Statistical grid
		BX34-004B	2082176.5	748300.13	Subsurface Soil	0.5-2.5'	VOCs	8260	8260	Statistical grid
		BX34-005A	2082143.8	748235.99	Surface Soil	0-0.5'	Metals	N/A	6010	Statistical grid
		BX34-005A	2082143.8	748235.99	Surface Soil	0-0.5'	Radionuclides	HPGe	Alpha Spec	Statistical grid
		BX34-005A	2082143.8	748235.99	Surface Soil	0-0.5'	VOCs	8260	8260	Statistical grid
		BX34-005B	2082143.8	748235.99	Subsurface Soil	0.5-2.5'	Metals	N/A	6010	Statistical grid
		BX34-005B	2082143.8	748235.99	Subsurface Soil	0.5-2.5'	Radionuclides	HPGe	Alpha Spec	Statistical grid
		BX34-005B	2082143.8	748235.99	Subsurface Soil	0.5-2.5'	VOCs	8260	8260	Statistical grid
		BX34-006A	2082137.4	748360.54	Surface Soil	0-0.5'	Metals	N/A	6010	Statistical grid
		BX34-006A	2082137.4	748360.54	Surface Soil	0-0.5'	Radionuclides	HPGe	Alpha Spec	Statistical grid
		BX34-006A	2082137.4	748360.54	Surface Soil	0-0.5'	VOCs	8260	8260	Statistical grid
		BX34-006B	2082137.4	748360.54	Subsurface Soil	0.5-2.5'	Metals	N/A	6010	Statistical grid
		BX34-006B	2082137.4	748360.54	Subsurface Soil	0.5-2.5'	Radionuclides	HPGe	Alpha Spec	Statistical grid
		BX34-006B	2082137.4	748360.54	Subsurface Soil	0.5-2.5'	VOCs	8260	8260	Statistical grid
		BX34-008A	2082210.8	748216.69	Surface Soil	0-0.5'	Metals	N/A	6010	Bias sample – drain outfall
		BX34-008A	2082210.8	748216.69	Surface Soil	0-0.5'	Radionuclides	HPGe	Alpha Spec	Bias sample – drain outfall
		BX34-008A	2082210.8	748216.69	Surface Soil	0-0.5'	VOCs	8260	8260	Bias sample – drain outfall
		BX34-008B	2082210.8	748216.69	Subsurface Soil	0.5-2.5'	Metals	N/A	6010	Bias sample – drain outfall
		BX34-008B	2082210.8	748216.69	Subsurface Soil	0.5-2.5'	Radionuclides	HPGe	Alpha Spec	Bias sample – drain outfall
		BX34-008B	2082210.8	748216.69	Subsurface Soil	0.5-2.5'	VOCs	8260	8260	Bias sample – drain outfall
		BX35-027A	2082209.3	748364.26	Surface Soil	0-0.5'	Metals	N/A	6010	Statistical grid
		BX35-027A	2082209.3	748364.26	Surface Soil	0-0.5'	Radionuclides	HPGe	Alpha Spec	Statistical grid
		BX35-027A	2082209.3	748364.26	Surface Soil	0-0.5'	VOCs	8260	8260	Statistical grid
		BX35-027B	2082209.3	748364.26	Subsurface Soil	0.5-2.5'	Metals	N/A	6010	Statistical grid
		BX35-027B	2082209.3	748364.26	Subsurface Soil	0.5-2.5'	Radionuclides	HPGe	Alpha Spec	Statistical grid
		BX35-027B	2082209.3	748364.26	Subsurface Soil	0.5-2.5'	VOCs	8260	8260	Statistical grid

**Table 3**  
**UBC 440 Sampling Summary**

Category	Total
Number of Sampling Locations	20
Number of Samples	40
Number of Radionuclide Analyses	40
Number of Metal Analyses	40
Number of VOC Analyses	40

Figure 1

IHISS Group 400-2  
Location Map

**KEY**

- UBC Site
- Demolished Structure
- Structure
- Paved area
- Dirt road
- Stream, ditch, or other drainage



Scale = 1 : 6,000  
State Plane Coordinate Projection  
Colorado Central Zone  
Datum: NAD 27

U.S. Department of Energy  
Rocky Flats Environmental Technology Site

Prepared by:



Prepared for:

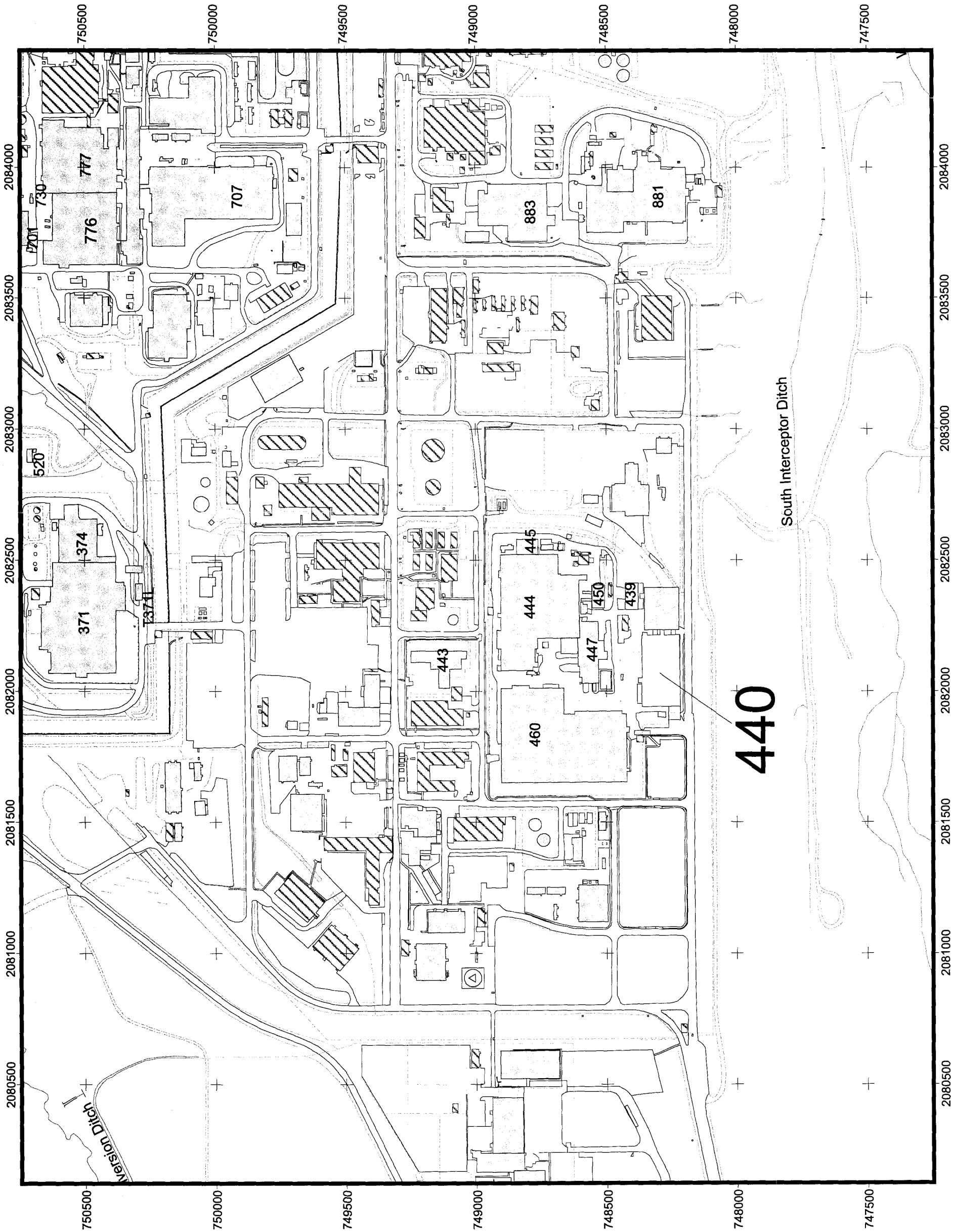


Figure 2

UBC 440  
Existing Surface  
and  
Subsurface Soil  
Sampling Results Greater  
Than MDLs or  
Background Means  
Plus Two Standard Deviations

KEY

UBC Site

Demolished Structure

Structure

Paved area

Dirt road

Stream, ditch, or other drainage

Soil (surface and subsurface) sampling location greater than background means plus two standard deviations or MDLs

Sampling location

N

100 0 100 200 Feet

Scale = 1:3,000

State Plane Coordinate Projection  
Colorado Central Zone  
Datum: NAD 27

U.S. Department of Energy  
Rocky Flats Environmental Technology Site

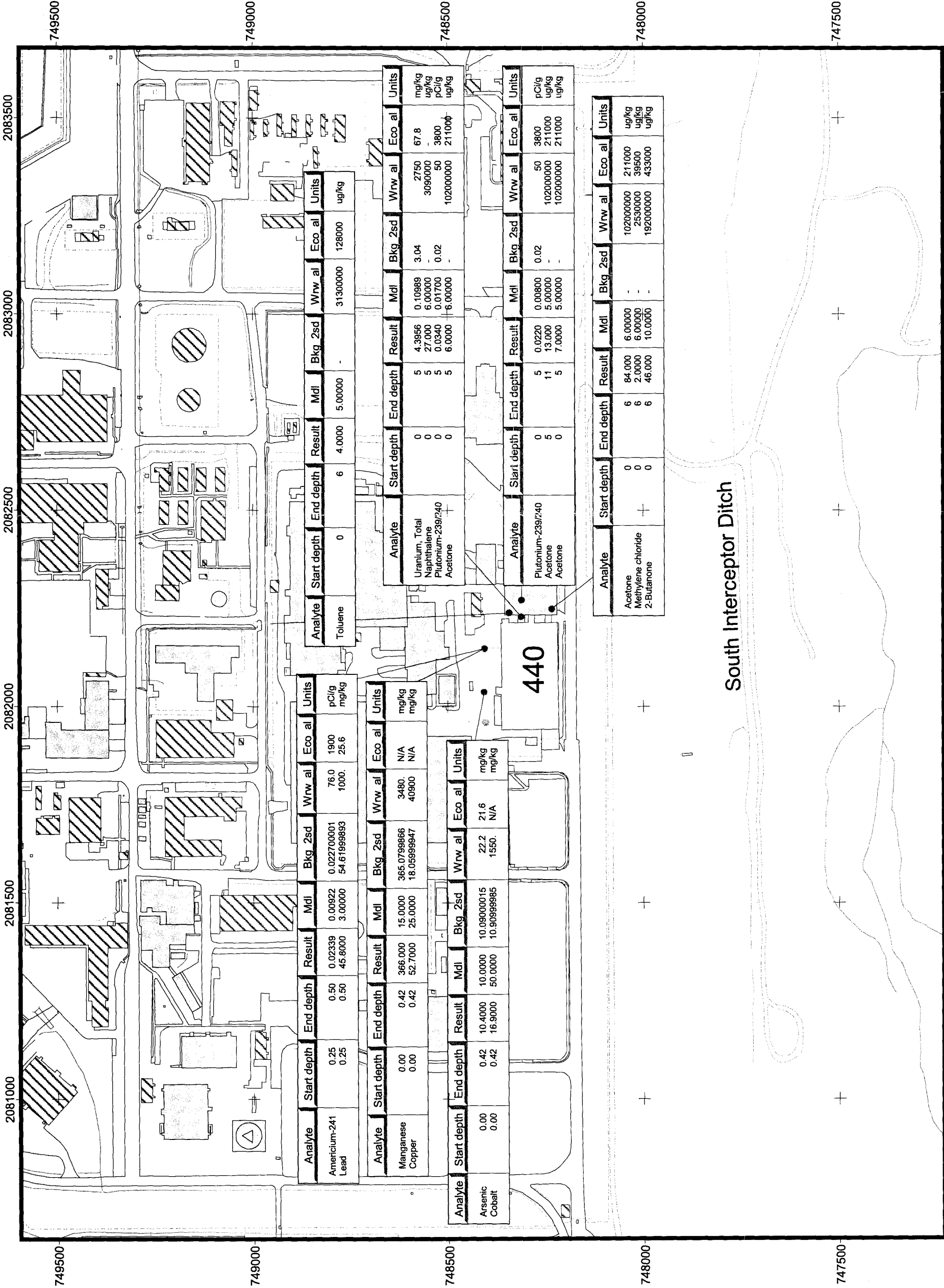
Prepared by:

RADMS

Prepared for:

Kaiser-Hill

Company

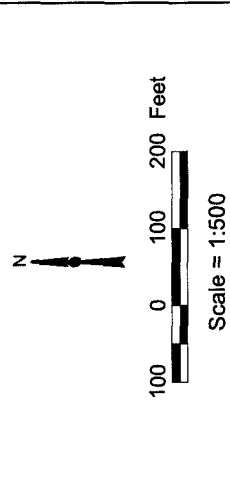


### Figure 3

## IHSS Group 400-2 Proposed Sampling Locations for UBC 440

## KEY

- |   |                                  |
|---|----------------------------------|
| ● | Biased sampling location         |
| ○ | Statistical sampling location    |
| □ | UBC Site                         |
| ▨ | Demolished Structure             |
| ▤ | Structure                        |
| ▦ | Paved area                       |
| ~ | Dirt road                        |
| ~ | Stream, ditch, or other drainage |



State Plane Coordinate Projection  
Colorado Central Zone  
Datum: NAD 27

U.S. Department of Energy  
Rocky Flats Environmental Technology Site

Prepared by:



Prepared for:

